

Basic Principles and Management Guidelines

The overall goal of the management program for the Sacramento River Conservation Area (SB 1086) is to *preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Redding and Chico, and reestablish riparian vegetation along the river from Chico to Verona*. This will be accomplished through this incentive-based, voluntary river management plan. Riparian habitat is actually a diverse mosaic of habitat types, which is part of a bigger picture that includes the entire river ecosystem and the humans within it.

Too often, restoration is attempted piecemeal, or is carried out in ways that do not take human activities into account. In the SB1086 program, the principles which provide the foundation for all restoration work are rooted in the fact that riparian habitat is closely linked to the river ecosystem and human activities. These principles, discussed in the next section, fall into six categories:

- Ecosystem management
- Flood management
- Voluntary participation
- Local concerns
- Bank protection
- Information and education

In addition to developing these principles, the committee has also developed a set of management guidelines. These tools are described in this chapter, and discussed in greater detail throughout the Handbook.

- Handbook
- Conservation Area definition
- Inner river zone guidelines and limited meander concept
- Restoration priorities
- Site-specific planning process
- Sacramento River Geographic Information System

The following actions were recommended:

- **Form locally-based, nonprofit management organization**
- **Obtain signed Memorandum of Agreement**
- **Develop site-specific plans and contracts**
 - conservation easements
 - set-aside agreements
 - bank protection
 - acquisition
 - landowner protections
 - floodplain management
- **Develop regulatory consistency/streamlining program**
- **Develop mutual assistance program**
- **Develop education and outreach program**
- **Support monitoring and research programs**

These actions are described in detail in Chapter 9. Figure 1-1 shows the relationship between the goals of the SB1086 program, its guiding principles, and the planning and action items.

Basic Principles:

The guiding principles of the SB1086 Riparian Habitat Management program are as follows:

- **Ecosystem Management** – Management should take an ecosystem approach, providing for the recovery of threatened and endangered species while taking into account human-imposed constraints, using concepts such as a limited meander. Where possible, management should allow for natural re-vegetation in areas of the river's influence. Valley oak woodland, however, needs to be actively re-stored on high terrace lands.

Ecosystem management uses natural processes to create a sustainable system over the long-term, often obtaining the greatest environmental benefits at the least cost. Management decisions should be based on the whole picture—the physical environment, the biological environment, and the human environment. It takes into account the interaction between organisms, their habitat, and physical processes. We must understand how the parts of a large alluvial river system interact before we can sensibly manage its various components. Ecosystem management differs markedly from current regulatory or species centered approaches, where problems are prioritized often without reference to their context.

Another feature of ecosystem management is that working with the physical realities of the system is often cost-effective. By using an ecosystem management approach we *can often gain maximum biological and ecological benefits in the most cost-efficient manner.*

An ecosystem management approach along the Sacramento River recognizes the fact that a large river and its floodplain are inseparable with respect to water, sediment, and productivity. They are so intimately linked that they should be understood, managed, and restored as a single ecosystem. Another key concept is that lateral channel migration is the fundamental process that determines the distribution and extent of riparian vegetation in the Sacramento River system.

GOAL

- Preserve remaining riparian habitat and Reestablish a continuous riparian ecosystem Along the Sacramento River between Redding And Chico, and reestablish riparian vegetation along the river from Chico to Verona

PRINCIPLES

- Use an ecosystem approach that contributes to the recovery of threatened and endangered species and is sustainable by natural processes
- Use the most effective and least environmentally damaging bank protection technique to maintain a limited meander, where appropriate
- Operates within the parameters of local, state and federal flood control and bank protection programs
- Participation by private landowners is voluntary; never mandatory
- Give full consideration to landowner, public, and local government concerns
- Accurate and accessible information/education is essential to sound resource management

ACTIONS

- Form locally-based nonprofit management organization
- Obtain signed Memorandum of Agreement
- Develop site-specific plans and contracts
 - conservation easements
 - set-aside agreements
 - bank protection
 - acquisition
 - landowner protections
 - floodplain management
- Develop permit consistency/streamlining program
- Develop mutual assistance program
- Develop education and outreach program
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MANAGEMENT GUIDELINES

- Handbook
- Conservation Area
- Restoration priorities
- Site-specific planning process
- Inner river zone and limited meander concept
- Sacramento River GIS

Chapter 2, “The Riparian Forests of the Sacramento River,” lays the groundwork for ecosystem management by describing the physical and biological components of the system. This chapter also describes the *inner river zone guidelines* (pages 2-24 through 2-28), which are used to determine the most dynamic part of the river ecosystem and where a limited meander might be a useful management tool. The human component of the system is discussed in the section of Chapter 2 pertaining to flood control, as well as throughout chapters 3 through 6 which discuss the four broad reaches of the river between Keswick and Verona.

- **Flood Control** – Conservation Area management must give full consideration to local, state, and federally-sponsored flood control and bank stabilization programs. As a result of the devastating floods of 1997 and 1998, Congress and the State Legislature authorized the State Reclamation Board and the Corps of Engineers “to develop a system-wide, comprehensive flood management plan for the Central Valley to reduce flood damages and integrate ecosystem restoration.” The Sacramento & San Joaquin River Basins Comprehensive Study programmatic document is due in 2002 for final authorization and implementation. Local flood control and bank protection issues must be resolved as part of any site-specific planning. In many cases, the county may maintain federally-constructed bank protection. The state Reclamation Board is responsible for maintaining safe floodways within the Sacramento River watershed. In some areas the Department of Water Resources is charged with maintaining flood control structures built by the federal government. The U.S. Army Corps of Engineers (USACE) constructed the Sacramento River Flood Control Project, the associated Sacramento River Bank Protection Project, and the Chico Landing to Red Bluff Project, a bank protection project. These local, state, and federal agencies should be part of any riparian habitat management planning as applicable. Chapter 7, “Local, State and Federal Agencies and Private Organizations” discusses the duties of those agencies in more detail. The role of the USACE is also discussed at the end of Chapter 2 in the section, “the Sacramento River Flood Control Project.”
- **Voluntary Participation** – Because private landowners own most of the existing riparian habitat on the river, there is a need for incentives, such as conservation easements, set-aside programs, bank protection, and outright purchase to encourage their active participation in riparian habitat management. Private landowner involvement in the programs outlined in this *Handbook* will be strictly voluntary. Chapter 9 describes action items, including many incentive programs, designed to encourage voluntary participation by private landowners in riparian habitat management programs.
- **Local Concerns** – Conservation Area management must give full consideration to landowner, public, and local government concerns. For example, neighboring landowners should not be adversely affected by riparian habitat management decisions on adjacent lands. No county or local government should lose revenue by virtue of an increase in public land. Access to riparian lands should be limited to public areas and managed through education, planning, and arrangements with law enforcement personnel. Neighboring landowners should be invited to be part of any riparian habitat management planning.

The SB 1086 planning process has, by law, included representatives from all of the counties, major interest groups, including landowner and environmental groups, and agencies along the river. This is an essential feature. To ensure that

local concerns are fully addressed, and that true system-wide planning is effective, this must continue.

The issue of local concerns will be addressed in several ways. The proposed nonprofit organization will be locally based, with a board of directors appointed by county supervisors. Site-specific management planning must, by definition, include affected landowners and county representatives. The planning must also address issues such as the effect on the local tax base as well as potential trespassing problems. Mutual assistance programs will be developed to improve cooperation among federal and state agencies and county government.

Another key concern of landowners along the river is changing and inconsistent environmental regulations. The SB1086 program foresees this problem being addressed through permit streamlining, or programs similar to “safe harbors” or “habitat conservation planning,” the development of which would require the active participation of the regulatory agencies. Chapter 9 discusses these action items.

- **Bank Stabilization** – The SB1086 program considers bank stabilization an implementation tool that, when used carefully, can further the goals of the program. Specifically, there are places along the river where bank stabilization will be necessary to limit the meander to the inner river zone. This limitation will take into account the potential need to protect existing land uses including agriculture and structural “hard points” such as buildings, bridges, pumping plants, flood management control structures and levees from bank erosion. A structural “hard point” is defined as a structure or group of structures within the area of recent river meander, that because of various attributes, including but not limited to, historic location, public and private investment, and government commitment, is deemed necessary to be protected from river movement. It is the intent and goal to expedite the permit process for protection of these structural hard points as discussed on pages 9-7 through 9-9. When a need is identified, and other alternatives have been considered, the most effective, economically feasible, and least environmentally damaging techniques should be used. The effect of bank stabilization on natural ecological processes along the Sacramento River is discussed in other areas of the Handbook (sections 2-2, 2-5, 2-33, and 9-6). Decisions on the location of bank protection should be made on a site-specific basis in cooperation with participating landowners. Funding mechanisms for bank protection may vary depending on funding sources and should be written into the site-specific contract.
- **Information and education** - Sound resource management depends upon a solid base of knowledge about the river and the regulations governing its use. A clearinghouse is needed to help riparian landowners obtain grants, permits, and technical assistance for work involving riparian habitat on their property. The need for a clearinghouse of information on the Sacramento River is multi-faceted. Chapter 9 discusses these actions further.

Management Guidelines:

- **Sacramento River Conservation Area** –In 2002, the Sacramento River Conservation Area Board of Directors amended the Handbook to remove the originally designated outer boundary of the Conservation Area except within Shasta and Tehama Counties. The boundary in Shasta and Tehama Counties would continue to be the approximate 100 year designated floodplain. Beginning at the southern Tehama County line, the Inner River Zone Guidelines provide the description for the outer boundary of the Conservation Area. The area, based on soils and floodplain features, denotes the locations where landowners would be eligible to participate in conservation programs. The organization will continue to coordinate with activities outside of the Inner River Zone that relate to the Inner River Zone.

Ownership of property within the Conservation Area will not result in any regulation or taxation to the landowner – it merely makes landowners eligible to participate in voluntary programs. The definition of the Conservation Area for each of the four broad reaches is discussed at the beginning of Chapters 3 through 6.

- ***Inner River Zone Guidelines*** – Much of the work of the SB1086 Riparian Habitat Committee and Advisory Council has centered on the concept of a limited, or managed, meander. A limited meander provides room for the channel movement necessary to attain the goal of the program, but also provides a greater degree of certainty for landowners along the river. A restriction of the Sacramento River's meander patterns may be necessary where studies indicate unobstructed meander, as defined, could impair the operational viability of public and private facilities considered to be protected hard points. The inner river zone guideline has been developed (pages 2-24 through 2-28) to determine that area along the river most prone to channel movement and flooding. It is in these areas that processes are the most intact and, given voluntary landowner participation, should be the first priority for preservation. The actual area, an inner river zone, will be determined on a case-by-case basis using voluntary participation, erosion projections, and flood frequency as criteria. Chapter 2 describes the inner river zone guideline, and Chapters 3 through 6 discuss the guidelines in the context of specific river reaches.

Site-specific Management Planning. The SB1086 program foresees riparian habitat conservation along the river being implemented by both public and private landowners who have developed site specific management plans through a proposed nonprofit organization. Implementation tools that could be incorporated into site-specific management plans might include conservation easements or “set aside” payments, outright purchase, bank protection, technical assistance, and permit streamlining. Chapter 9 contains a detailed discussion of site-specific management planning. When implementing the restoration strategies (as described in Chapters 3-6) and in following the restoration priorities, the proximity of the inner river zone should be the first planning consideration.

--Protect inner river zone boundaries. If the meander is getting close to the inner river zone boundary, decide if bank protection will be installed or if other previously agreed-upon actions will be implemented.

- ***Restoration Priorities*** – Evaluation of restoration projects within the inner river zone must follow the six guiding principles of the program. The site should then be assessed using the following set of restoration priorities. By focusing on river process, these priorities are designed so that projects are carried out in a manner consistent with the guiding principle on ecosystem management. They are listed in order of their significance to ecosystem management of the Sacramento River

and its floodplain. Chapters 3 through 6 contain descriptions of how these priorities apply to each of the four broad subreaches.

--*Protect physical process where still intact.* Does the project protect existing physical process of erosion, deposition, or flooding? Such projects would likely be within *the inner river zone guideline* described in Chapter 2, where erosion and deposition are predicted to occur over the next 50 years and where the river channel has been in the last 100 years. Or, the proposed project might lie in an area outside of the inner river zone guideline, but still be subject to flooding.

--*Allow riparian forests to reach maturity.* Does the project include restoration of process? For example, a project may reduce stress on local flood control systems by redesigning non-strategic flood control structures. Allowing flooding and river channel migration where feasible restores the natural physical and successional process of the river. In some locations, reconnecting the river with its floodplain may increase channel storage (reducing flood effects downstream and regionally), maintain existing riparian forests, and initiate natural self-restoration with a minimum of input.

--*Restore physical and successional process.* Does the project include restoration of process? For example, a project may reduce stress on local flood control systems by redesigning non-strategic flood control structures. Allowing flooding and river channel migration where feasible restores the natural physical and successional process of the river. In some locations, reconnecting the river with its floodplain may increase channel storage (reducing flood effects down-stream and regionally), maintain existing riparian forests, and initiate natural self-restoration with a minimum of input.

--*Conduct reforestation activities.* If the project includes restoration activities, is this used as a last resort? Manual reforestation should be viewed as a last resort for several reasons: it is difficult to determine what vegetation community and structure is appropriate for a given site; it's expensive; it's not always successful.

- **Sacramento River GIS.** An important basis of any comprehensive plan for the River is a shared information base, such as that provided by a geographic information system (GIS). The principal advantage of GIS is that digital data are permanently stored and may be accessed quickly for mapping or analysis. The Sacramento River GIS was the primary tool used to define the Conservation Area. This delineation incorporated aspects of geology, geomorphology, soils, hydrology, vegetation, and infrastructure (Appendix C). In a similar fashion, it is presently being used to manage resource information and develop the inner river zone guidelines discussed in Chapter 2.

The GIS is often used to prepare maps illustrating physical factors and river dynamics at specific sites. These maps aid landowners in making sound land management decisions. Although the Sacramento River GIS is useful as an inventory and resource database, it could be developed into a predictive tool to assist in guiding restoration and management decisions. "What if?" modeling of river meandering could be used to evaluate proposed management scenarios and their potential consequences to habitat, wildlife species, and landowners.

Basic Principles and Management Guidelines

The SB1086 program and this Handbook lay a foundation of guiding principles and planning tools with which to achieve its goal of restoring and maintaining a continuous and self-sustaining riparian corridor along the Sacramento River. A nonprofit management entity, supported by organizations and agencies through a Memorandum of Agreement has been formed, and is working to carry out the actions that are essential for the success of the program, uniting site-specific knowledge with a big-picture understanding of riparian habitat issues along the Sacramento River.